

# 牛客网求职算法

## 真题精讲-高级班

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第七课

### 牛客网2020最新求职算法——真题精讲高级班

面向BAT、字节跳动等高难度公司，详细讲解40道左右不同类型最新的笔试面试算法真题，并提供最优解和代码，搭配课后作业强化训练。

上课时间：每周六日 16:00——18:00

上课老师：左程云，华科本科，芝加哥大学硕士，曾就职于IBM、百度、GrowingIO、亚马逊，也是牛客网的老师。

牛客网：一个提供海量校招真题及专项练习题，笔经面经，招聘信息，学习资源及交流的平台。求职之前，先上牛客<https://www.nowcoder.com/>



笔经面经



学习交流

## 题目一

Given several boxes with different colors represented by different positive numbers. You may experience several rounds to remove boxes until there is no box left. Each time you can choose some continuous boxes with the same color (composed of  $k$  boxes,  $k \geq 1$ ), remove them and get  $k*k$  points. Find the maximum points you can get.

Example 1:

Input:

[1, 3, 2, 2, 2, 3, 4, 3, 1]

Output:

23

Explanation:

[1, 3, 2, 2, 2, 3, 4, 3, 1]

----> [1, 3, 3, 4, 3, 1] ( $3*3=9$  points)

----> [1, 3, 3, 3, 1] ( $1*1=1$  points)

----> [1, 1] ( $3*3=9$  points)

----> [] ( $2*2=4$  points)

## 题目二

Median is the middle value in an ordered integer list. If the size of the list is even, there is no middle value. So the median is the mean of the two middle value.

Examples:

[2, 3, 4] , the median is 3

[2, 3], the median is  $(2 + 3) / 2 = 2.5$

Given an array nums, there is a sliding window of size k which is moving from the very left of the array to the very right. You can only see the k numbers in the window. Each time the sliding window moves right by one position. Your job is to output the median array for each window in the original array.

## 题目二

For example,

Given `nums = [1, 3, -1, -3, 5, 3, 6, 7]`, and `k = 3`.

Window position

Median

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[1 3 -1] -3 5 3 6 7	1
1 [3 -1 -3] 5 3 6 7	-1
1 3 [-1 -3 5] 3 6 7	-1
1 3 -1 [-3 5 3] 6 7	3
1 3 -1 -3 [5 3 6] 7	5
1 3 -1 -3 5 [3 6 7]	6

Therefore, return the median sliding window as `[1, -1, -1, 3, 5, 6]`.

### 题目三

You have  $k$  lists of sorted integers in ascending order. Find the smallest range that includes at least one number from each of the  $k$  lists.

We define the range  $[a, b]$  is smaller than range  $[c, d]$  if  $b - a < d - c$  or  $a < c$  if  $b - a == d - c$ .

Example 1:

Input:  $[[4, 10, 15, 24, 26], [0, 9, 12, 20], [5, 18, 22, 30]]$

Output:  $[20, 24]$

Explanation:

List 1:  $[4, 10, 15, 24, 26]$ , 24 is in range  $[20, 24]$ .

List 2:  $[0, 9, 12, 20]$ , 20 is in range  $[20, 24]$ .

List 3:  $[5, 18, 22, 30]$ , 22 is in range  $[20, 24]$ .

## 题目四

There is a strange printer with the following two special requirements:

The printer can only print a sequence of the same character each time.

At each turn, the printer can print new characters starting from and ending at any places, and will cover the original existing characters.

Given a string consists of lower English letters only, your job is to count the minimum number of turns the printer needed in order to print it.

Example 1:

Input: "aaabbb"

Output: 2

Explanation: Print "aaa" first and then print "bbb".

Example 2:

Input: "aba"

Output: 2

Explanation: Print "aaa" first and then print "b" from the second place of the string, which will cover the existing character 'a'.

## 提升项目经验

- 课程名称：《牛客高薪求职项目课--（牛客网）》
- 课程地址：<https://www.nowcoder.com/courses/semester/senior>
- 独家内部100元优惠券：DRMscjy



## 面试算法书籍

- 书名：《程序员代码面试指南—IT名企算法与数据结构题目最优解》
- 作者：左程云



# THANK YOU

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